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PRODUCTION OF ALUMINOSILICATE GLASS CONTAINING RARE EARTH METAL

[*Kidorui ganyuh aruminokeisanen garasuno seizoh houhoh*]

Inventor(s):	Akio Makishima 500-10 Shimo Hirokawa Sakura-mura, Shingi-gun Ibaragi-ken Hajime Kubo 1-28-3 Izumi Suginami-ku, Tokyo

Kohjiroh Shimodaira
441-3 Yukitani-cho
Kodori, Tatsugasaki-shi

Applicant(s): Chief of Inorganic Materials Research Inst. Science and Technology Agency

[*There are no amendments to this patent.*]

Specification

Title of the invention

Production of aluminosilicate glass containing rare earth metal

Claims of the invention

1) A method for production of aluminosilicate glass containing rare earth metal characterized by the fact that 30 to 53 wt% of secondary shirasu, 9 to 30 wt% of Al_2O_3 and 23 to 54 wt% of Y_2O_3 concentrate are used as raw materials, and the mixture thereof is made molten under heat and vitrified.

2) A method for production of aluminosilicate glass characterized by the fact that 13 wt% or less of TiO_2 or 9 wt% or less of ZrO_2 is used in addition to 30 to 53 wt% of secondary shirasu, 9 to 30 wt% of Al_2O_3, and 23 to 54 wt% of Y_2O_3 concentrate and made molten under heat and vitrified.

Detailed description of the invention

Field of industrial application

The present invention pertains to a method of manufacturing aluminosilicate glass containing a rare earth metal produced as melting is done at a temperature of 1550°C or below.

Prior art

Aluminosilicate glass consisting of silica and alumina has high heat-resistance, excellent mechanical strength, and high corrosion resistance and resistance to weathering. However, a very high temperature is required to produce the aforementioned glass. The temperature limit of electric furnaces where standard silicon carbide heating elements are used is approximately 1550°C; thus, production of the aforementioned glass has not been possible by the hot-melt method using standard electric furnaces.

In general, when an alkali oxide and alkali earth oxide are included, the hot-melt temperature is reduced and production of a glass using an electric furnace with standard silicon carbide heating elements is possible at a temperature of approximately 1550°C. However, when an alkali oxide and an alkali earth oxide are included, a reduction occurs in properties such as heat-resistance, mechanical properties, chemical resistance, corrosion resistance and resistance to weathering.

[p. 2]

The present inventors discovered that a glass could be produced at a temperature of approximately 1550°C using a standard electric furnace when Y_2O_3 was included and that the glass produced had high mechanical strength [Journal of Industrial Society of America, Vol. 61, pp. 247-249 (1978)]. However, separated Y_2O_3 is expensive and a cost increase is inevitable.

In order to eliminate the aforementioned problem, a study was conducted by the present inventors on the use of yttrium concentrate, used as an intermediate in the production of Y_2O_3, and, as a result, the discovered that an ore of Y_2O_3, for example, a yttrium concentrate made of purified zenotime consists of several tens of percent of Y_2O_3, and rare earth oxides such as Dy_2O_3, Nd_2O_3, CeO_2, Ho_2O_3, Yb_2O_3, Sm_2O_3, La_2O_3, Gd_2O_3 and Er_2O_3, and that the aforementioned material was used instead of Y_2O_3 and an aluminosilicate glass was produced, (1) properties, in particular, alkali resistance of the aluminosilicate glass are not adversely influenced by impurities other than Y_2O_3, and (2) the melting point of the glass could be reduced

by approximately 50°C compared to the case where the aforementioned Y_2O_3 was used, and that the cost could be reduced by 1/5 (Japanese Patent Application No. Sho 57-180498).

Continuing research on cost reduction was done by the present inventors, and as a result, they discovered that the shirasu of volcanic ash widely scattered on the island of Kyushu [Japan] included a vitreous aluminosilicate material as the main component, and that the chemical composition of the secondary shirasu, which were in the secondary deposits of shirasu, was substantially constant, and further research was conducted. The chemical composition of the secondary shirasu is as shown below.

SiO_2	82.59 mol%	75.87 wt%
Al_2O_3	9.16 "	14.28 "
Fe_2O_3	0.92 "	2.24 "
CaO	1.54 "	1.32 "
MgO	0.49 "	0.30 "
Na_2O	3.35 "	3.18 "
K_2O	1.95 "	2.80 "

As shown above, the sum of SiO_2 and Al_2O_3 is approximately 92 mol%, and the majority of that is aluminosilicate. When glass was produced using the Y_2O_3 concentrate, secondary shirasu, and Al_2O_3 as raw materials, a glass containing the aforementioned components and approximately 5 mole % or less of Fe_2O_3, CaO, MgO, Na_2O and K_2O is included in the aforementioned secondary shirasu and the amounts are listed in the aforementioned table for the total that was produced. Furthermore, when the aforementioned are used as raw materials, vitrification time could be reduced to approximately 1/3 in comparison to the case where only SiO_2 and Al_2O_3 were used as raw materials.

The present invention is a method for production of aluminosilicate glass containing rare earth metal characterized by the fact that 30 to 53 wt% of secondary shirasu, 9 to 30 wt% of Al_2O_3 and 23 to 54 wt% of Y_2O_3 concentrate are used as raw materials, and the mixture of the same is molten under heat and vitrified.

Y_2O_3 concentrate used in the present invention is an ore of Y_2O_3, for example, an intermediate product of zenotime produced by the sulfuric acid decomposition method or alkali decomposition method. In the case of the alkali decomposition method, the zenotime is added slowly to 400°C molten caustic soda. The reaction is exothermic and cooling is done after the reaction and the reaction product is extracted in water and sodium phosphate and excessive alkali is removed. The rare earth hydroxide produced is dissolved in a small amount of hydrochloric acid, then, oxalic acid is added to the aforementioned solution to form a rare oxalate, and when baking is done at a temperature of 900°C, the yttrium concentrate is produced. An analysis example is shown below.

Analysis example of yttrium concentrate (%)

Rare earth base		**Rare earth base**	
Y_2O_3	62.9%	Sm_2O_3	1.4
CeO_2	3.14	Nd_2O_3	4.3
La_2O_3	2.23	Pr_2O_3	0.88
Eu_2O_3	0.02	ThO_2	<0.2
Gd_2O_3	2.7	Rare Earth	98.0%
Dy_2O_3	11.3	IgLoss	0.2
Er_2O_3	1.43	CaO	<0.2
Ho_2O_3	3.8	SO_3	<0.5
Yb_2O_3	5.0	P_2O_5	<0.1

In other words, component substances are included in the ore without separation.

[p. 3]

When the amount of the secondary shirasu included in the glass raw material of the present invention is 30 wt% or below, the hot-melt temperature is increased and vitrification is not possible at 1550°C. On the other hand, when the aforementioned amount exceeds 53 wt%, properties of an aluminosilicate glass containing rare earth cannot be achieved.

When the amount of Al_2O_3 is below 9 wt%, vitrification is not possible. On the other hand, when the amount exceeds 30 wt%, the hot-melt temperature is increased and vitrification is not possible at 1550°C.

When the amount of Y_2O_3 concentrate is 23 wt% or below, properties of a glass containing a rare earth oxide cannot be achieved and vitrification is not possible at 1550°C. On the other hand, when the amount exceeds 54 wt%, crystallization occurs and a glass cannot be produced.

Therefore, 30 to 53 wt% of secondary shirasu, 9 to 30 wt% of Al_2O_3 and 23 to 54 wt% of Y_2O_3 concentrate are required.

In addition to the aforementioned raw materials, 13 wt% or less of TiO_2 or 9 wt% or less of ZrO_2 may be used, as needed. When TiO_2 is added, increase in chemical resistance, corrosion resistance, and resistance to weathering can be achieved, but when the amount added exceeds 13 wt%, crystallization occurs and a glass cannot be produced. When ZrO_2 is added, an increase in chemical resistance, corrosion resistance, resistance to weathering, mechanical properties, and heat-resistance can be achieved, but when the amount added exceeds 9 wt%, crystallization occurs and a glass cannot be produced.

The above-mentioned raw materials are molten at a temperature of 1550°C or below and vitrified to produce an aluminosilicate glass containing rare earth.

Working Example 1

A mixture consisting of 51.93 wt% of secondary shirasu, 12.60 wt% of Al_2O_3, and 35.47 wt% of Y_2O_3 concentrate was placed in a platinum crucible, made molten in an electric furnace for 2 hours at a temperature of 1500°C, and then, cast onto an aluminum sheet to cool naturally. A light brown transparent glass with an absence of air bubbles was produced.

The thermal expansion factor of the above-mentioned glass produced was 53.1×10^{-7} 1/°C, and the degree of thermal expansion is significantly lower than that of standard window glasses. Thus, impact resistance is higher than that of standard soda-lime glass (thermal expansion factor of approximately 90×10^{-7} 1/°C) when used as a window glass. The aforementioned platinum crucible was removed from the furnace while the aforementioned glass is in a molten state and manually formed into a glass fiber, formation of a glass fiber with a thickness in the range of several microns to several mm and a length of 1 m or longer was easily achieved. A hard glass with a density of 3.258 g/cm^3 and Vickers hardness of 860 Kg/mm was produced.

Based on the raw material ratios calculated, the chemical composition of the aforementioned glass was 39.40 wt% (hereinafter referred to as %) of SiO_2, 20.02% of Al_2O_3, 1.16% of Fe_2O_3, 0.69% of CaO, 0.16% of MgO, 1.65% of NaO, 1.45% of K_2O, and 35.47% of yttrium concentrate.

Working Example 2

A mixture consisting of 36.08 wt% of secondary shirasu, 26.03 wt% of Al_2O_3, and 37.89 wt% of yttrium concentrate was placed in a platinum crucible, made molten in an electric furnace for 1.5 hours at a temperature of 1450°C; then, the temperature of the electric furnace was increased to 1500°C and hot-melting was done for 20 minutes, and then, the material was cast onto an aluminum sheet to cool naturally. A light brown transparent glass was produced. The thermal expansion factor of the glass produced was 53.0×10^{-7} 1/°C, and the density was 3.456 g/cm^3.

Working Example 3

A mixture consisting of 40.28 wt% of secondary shirasu, 17.53 wt% of Al_2O_3, and 42.19 wt% of yttrium concentrate was placed in a platinum crucible, molten in an electric furnace for 1.5 hours at a temperature of 1500°C, and then, cast onto an aluminum sheet to cool naturally. A light brown transparent glass with an absence of air bubbles was produced. The thermal expansion factor of the glass produced was 59.2×10^{-7} 1/°C, and the density was 3.521 g/cm^3. Furthermore, as in the case of Working Example 1, formation of fiber was achieved easily from the glass produced.

Working Example 4

A mixture consisting of 30.19 wt% of secondary shirasu, 18.26 wt% of Al_2O_3, 40.00 wt% of yttrium concentrate, and 11.55 wt% of TiO_2 was placed in a platinum crucible, made molten in an electric furnace for 1.5 hours at a temperature of 1550°C, and then, cast onto an aluminum sheet to cool naturally.

A reddish brown transparent glass with an absence of air bubbles was produced. The thermal expansion factor of the glass produced was 56×10^{-7} 1/°C, and the density was 3.612 g/cm^3.

[p. 4]

Working Example 5

A mixture consisting of 35.12 wt% of secondary shirasu, 17.06 wt% of Al_2O_3, 39.11 wt% of yttrium concentrate, and 8.71 wt% of ZrO_2 was placed in a platinum crucible and made molten in an electric furnace for 1.5 hours at a temperature of 1550°C. Furthermore, the aforementioned molten material was cast onto an aluminum sheet to cool naturally. A light brown transparent glass with an absence of air bubbles was produced. The thermal expansion factor of the glass produced was 53.0×10^{-7} 1/°C, and the density was 3.621 g/cm^3.

Effect of the invention

According to the method of the present invention, secondary shirasu and yttrium concentrate are used; as a result, an aluminosilicate containing Y_2O_3 can be produced at a low

cost, and furthermore, melting can be done in a standard electric furnace since the hot-melt temperature is low, heating time is reduced, and the glass produced retains the superior properties of aluminosilicate glass. Furthermore, the glass produced has high modulus and alkali resistance is high; thus, the glass can be used with cement as a composite. And furthermore, Fe_2O_3 and CeO_2 are included, thus, good ultraviolet absorption can be achieved, and therefore, the glass can be used effectively as window glass for sunrooms, sunroofs of automobiles, ultraviolet-absorbing containers for chemical and scientific use, and as a window material.

Applicant: Y. Gotoh, Chief of Inorganic Material Research Inst. Science and Technology Agency

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(71)Applicant : NATL INST FOR RES IN INORG MATER

(72)Inventor : MAKISHIMA SUKEO
KUBO HAJIME
SHIMODAIRA KOJIRO

(54) PRODUCTION OF ALUMINOSILICATE GLASS CONTAINING RARE EARTH METAL

(57)Abstract:

PURPOSE: To shorten the glass smelting time and to reduce the production cost of the titled silicate glass, by melting and vitrifying a mixture of secondary shirasu, Al_2O_3 and Y_2O_3 concentrate.

CONSTITUTION: A mixture of 30W53(wt)% secondary shirasu, 9W30% Al_2O_3 and 23W54% Y_2O_3 concentrate is vitrified by melting. The above mixture may further contain ≤13% TiO_2 and/or ≤9% ZrO_2. The addition of TiO_2 is effective to improve chemical resistance, corrosion resistance and weathering proofness, however, crystallization takes place at >13% to fail the production of glass. The addition of ZrO_2 is effective to improve chemical resistance, corrosion resistance, weathering proofness, mechanical properties and heat-resistance, however, crystallization takes place at >9% to fail the production of glass.

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㊿発明の名称　希土類含有アルミノけい酸塩ガラスの製造法

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⑫発明者　牧島　亮男　茨城県新治郡桜村下広岡500-10
⑫発明者　久保　紘　東京都杉並区和泉1-28-3
⑫発明者　下平　高次郎　竜ケ崎市小通幸谷町441-3
⑪出願人　科学技術庁無機材質研究所長

明　細　書

1.発明の名称

希土類含有アルミノけい酸塩ガラスの製造法

2.特許請求の範囲

1) 二次シラス30～53重量%，Al_2O_3 9～30重量%，Y_2O_3 コンセントレート23～54重量%を原料とし、これらの混合物を加熱溶融してガラス化することを特徴とする希土類含有アルミノけい酸塩ガラスの製造法。

2) 二次シラス30～53重量%，Al_2O_3 9～30重量%，Y_2O_3 コンセントレート23～54重量%の他か、更に TiO_2 13重量%または及び ZrO_2 9重量%を超えない量添加し、これを加熱溶融してガラス化することを特徴とする希土類含有アルミノけい酸塩ガラスの製造法。

3.発明の詳細な説明

産業上の利用分野

本発明は1550℃以下の温度で溶融して製造し得られる希土類含有アルミノけい酸塩ガラスの製造法に関する。

従来技術

シリカとアルミナからなるアルミノけい酸塩ガラスは、耐熱性が高く、機械的強度も良好であり、また耐食性，耐風化性の優れたガラスである。しかし、この系のガラスを得るためには非常に高温を必要とする。

一般の炭化けい素発熱体を使用する電気炉では、1550℃程度の温度までが限度であるために、この系のガラスは一般の電気炉による溶融法では製造することができなかつた。

一般にアルカリ酸化物、アルカリ土類酸化物を含有させると、溶融温度が低下し、1550℃程度の温度で、一般の炭化けい素を発熱体として使用した電気炉を使用してガラスを製造することが可能となる。しかし、アルカリ酸化物、アルカリ土類酸化物を含有させると、耐熱性，機械的性質，耐化学性，耐食性及び耐風化性の諸性質を低下させる問題点がある。

本発明者らはさきに、Y_2O_3 を含有させると、

1550℃程度の一般の電気炉を使用してガラスを製造し得られると共に、得られるガラスは機械的に優れたものであることを明らかにした。（米国窯業協会誌61巻247～249頁（1978年））しかし、分離Y_2O_3は高価であるため、それだけコスト高となる問題点があつた。

この問題点を解決するため、本発明者らはさきにY_2O_3を製造する中間精製物であるイットリウムコンセントレートを利用すべく研究したところ、Y_2O_3の原鉱石、例えばゼノタイムより精製して得られるイットリウムコンセントレートは、数10%のY_2O_3と、残りはDy_2O_3，Nd_2O_3，CeO_2，Ho_2O_3，Yb_2O_3，Sm_2O_3，La_2O_3，Gd_2O_3，Er_2O_3等の希土類酸化物よりなつているが、これをY_2O_3に代え添加使用してアルミノけい酸塩ガラスを製造したところ、(1) Y_2O_3のほかの他の含有不純物はアルミノけい酸塩ガラスの特性、特に耐アルカリ性などに悪影響がない。(2)これを使用すると分離Y_2O_3を使用した場合よりもガラスの溶融点を約50℃低下し得られ、しかもその価格も$\frac{1}{5}$であるため、安価となることが分つた。（特願昭57－180498号）

本発明者らは更にコストダウンについて研究を重ねた結果、九州に広く分散する火山灰のシラスは、その主成分がアルミノけい酸塩のガラス質のものであり、シラスの二次堆積物である二次シラスは、その化学組成が殆ど一定であることに着目し、これを利用すべく検討を加えた。二次シラスの化学組成を示すと次の通りである。

SiO_2	82.59モル%	75.87重量%
Al_2O_3	9.16 〃	14.28 〃
Fe_2O_3	0.92 〃	2.24 〃
CaO	1.54 〃	1.32 〃
MgO	0.49 〃	0.30 〃
Na_2O	3.35 〃	3.18 〃
K_2O	1.95 〃	2.80 〃

このように、SiO_2とAl_2O_3の成分合計は約92モル%で、大部分がアルミノけい酸塩であるので、Y_2O_3コンセントレート，二次シラス及びAl_2O_3を原料としてガラスを製造することを試みたところ、これらの成分のほかに上記二次シラスに含まれる前記表にあるFe_2O_3，CaO，MgO，Na_2O，K_2Oが全量で約5モル以下含有するガラスが得られること、及びこれを原料とすると、SiO_2，Al_2O_3を原料とした場合に比べて、ガラス溶融時間が約$1/3$に短縮し得られることが分つた。これらの知見に基いて本発明を完成した。

本発明の要旨は二次シラス30～53重量%，Al_2O_3 9～30重量%，Y_2O_3コンセントレート23～54重量%を原料とし、これらの混合物を加熱溶融してガラス化することを特徴とする希土類含有アルミノけい酸塩ガラスの製造法にある。

本発明において言うY_2O_3コンセントレートとは、Y_2O_3の原鉱石、例えばゼノタイムを硫酸分解法またはアルカリ分解法によつて得られる中間精製物である。アルカリ分解法で示すと、ゼノタイムを徐々に400℃の溶融した苛性ソーダに加える。反応は発熱反応で反応終了後冷却して反応物を水で抽出してリン酸ソーダ，過剰のアルカリは除去される。得られた希土類水酸化物を少量の塩酸に溶解し、この溶液にしゆう酸を加えて希土しゆう酸塩とし、これを900℃で焼成するイットリウムコンセントレートが得られる。その分析例を示すと次の通りである。

イットリウムコンセントレートの分析例（%）

希土ベース		希土ベース	
Y_2O_3	62.9%	Sm_2O_3	1.4
CeO_2	3.14	Nd_2O_3	4.3
La_2O_3	2.23	Pr_2O_3	0.88
Eu_2O_3	0.02	ThO_2	<0.2
Gd_2O_3	2.7	希土	98.0%
Dy_2O_3	11.3	IgLoss	0.2
Er_2O_3	1.43	CaO	<0.2
Ho_2O_3	3.8	SO_3	<0.5
Yb_2O_3	5.0	P_2O_5	<0.1

すなわち、鉱石中の成分元素のままで分離操作を行わないで含有しているものである。

本発明のガラス原料において、二次シラスが30

重量%より少ないと溶融温度が高くなり、1550℃ではガラス化できない。また、53重量%を超えると希土類含有アルミノけい酸塩ガラスの特性が発揮できなくなる。

Al_2O_3が9重量%より少ないとガラス化しなく、30重量%を超えると溶融温度が高くなり、1550℃ではガラスが得られない。

Y_2O_3コンセントレートが23重量%より少ないと希土類酸化物含有ガラスとしての特性が発揮できず、また1550℃ではガラスが得られなく、54重量%を超えると結晶化してしまいガラスが得られない。

従って、二次シラスは30〜53重量%,Al_2O_3は9〜30重量%、Y_2O_3コンセントレートは23〜54重量%の範囲の量であることが必要である。

前記の原料のほかに、必要に応じTiO_2，13重量%、およびまたはZrO_2 9重量%を超えない量添加してもよい。TiO_2の添加は耐化学性，耐食性，耐風化性を高める作用をするが、13重量%を超えると結晶化してしまいガラスが得られない。ZrO_2の添加は耐化学性，耐食性，耐風化性，機械的性質，耐熱性を高める作用をするが9重量%を超えると結晶化してしまいガラスが得られない。

以上のような原料は1550℃以下の温度で溶解しガラス化し、希土類含有アルミノけい酸塩ガラスが得られる。

実施例1.

二次シラス51.93重量%，Al_2O_3 12.60重量%，Y_2O_3コンセントレート35.47重量%の割合で混合したものを白金るつぼに入れ、電気炉中で1500℃で2時間加熱溶融した後にアルミニウム板上に流し出し放冷した。明るい薄褐色の泡のない透明なガラスが得られた。

このガラスの熱膨張率は53.1×10^{-7} 1/℃であり、一般の窓ガラスよりもはるかに低熱膨張率である。そのために窓ガラスとして使用する際の耐熱衝撃性は一般のソーダ石灰系のガラス（熱膨張率は約90×10^{-7} 1/℃）より高い。このガラスが溶融した状態で炉外に白金るつぼを取り出し、手引きによりガラス繊維化を行つたところ、数μm〜数mmの各種太さで1m以上の長さのガラス繊維を容易に得ることができた。密度は3.258 g/cm³、ビイカース硬度は860 Kg/mm²で、硬いガラスである。

その化学組成は、原料割合から計算すると、SiO_2 39.40重量%、（以下%は重量），Al_2O_3 20.02%，Fe_2O_3 1.16%，CaO 0.69%，MgO 0.16%，Na_2O 1.65%，K_2O 1.45%，イットリアコンセントレート35.47%である。

実施例2.

二次シラス36.08重量%，Al_2O_3 26.03重量%，イットリアコンセントレート37.89重量%の割合で混合したものを白金るつぼに入れ、電気炉中で1450℃で1.5時間，続いて電気炉の温度を1500℃にあげ20分間加熱溶融した後、アルミニウム板上に流し出し放冷した。明るい薄褐色の透明なガラスが得られた。このガラスの熱膨張率は53.0×10^{-7} 1/℃、密度は3.456 g/cm³であつた。

実施例3.

二次シラス40.28重量%，Al_2O_3 17.53重量%，イットリアコンセントレート42.19重量%の割合で混合したものを白金るつぼに入れ、電気炉中で1500℃で1.5時間加熱溶融した後、アルミニウム板上に流し出し放冷した。明るい薄褐色の泡のない透明なガラスが得られた。このガラスの熱膨張率は59.2×10^{-7} 1/℃、密度は3.521 g/cm³であつた。また、このガラスも実施例1と同様に容易に繊維化することができた。

実施例4.

二次シラス30.19重量%，Al_2O_3 18.26重量%，イットリアコンセントレート40.00重量%，TiO_2 11.55重量%の割合で混合したものを白金るつぼに入れ、これを電気炉中で1550℃で1.5時間加熱溶融した。この溶融物をアルミニウム板上に流し出し放冷した。

赤味を帯びた茶褐色の泡のない透明なガラスが得られた。このガラスの熱膨張率は56×10^{-7} 1/℃、密度は3.612 g/cm³であつた。

実施例5.

二次シラス35.12重量%，Al_2O_3 17.06重量%，イットリアコンセントレート39.11重量%，ZrO_2 8.71重量%の割合で混合したものを白金るつぼに入れ、これを電気炉中で1550℃で1.5時間加熱溶融した。この溶融物をアルミニウム板上に流し出し放冷した。明るい薄褐色の泡のない透明なガラスが得られた。このガラスの熱膨張率は53.0×10^{-7} 1/℃、密度は3.621 g/cm^3であつた。

発明の効果

本発明の方法によると、二次シラス及びイットリアコンセントレートを使用するため、Y_2O_3を含有するアルミノけい酸塩が安価に得られ、且つ溶融温度も低いので一般の電気炉で溶融し得られ、また加熱時間も短かくてすみ、得られるガラスはアルミノけい酸塩ガラスの特性をそのまま保有する優れた効果を有する。また得られるガラスは高弾性率を有し、耐アルカリ性が高いのでセメントと複合して使用することができる。そして、Fe_2O_3とCeO_2を含有するため紫外線吸収特性を有し、紫外線吸収着色透明ガラスとしてサンルームの窓，自動車用ルーフ窓，その他各種の理化学用の紫外線吸収容器，窓材としても有効に使用し得られる。

特許出願人　科学技術庁無機材質研究所長

後藤　優

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L94: Entry 74 of 111 File: DWPI Jan 9, 1987

DERWENT-ACC-NO: 1987-046201
DERWENT-WEEK: 198707

TITLE: Mfg. rare earth metal contg. alumino:silicate - by heat fusing mixt. contg. volcanic ash, aluminium oxide and yttrium oxide

PATENT-ASSIGNEE: KAGAKU GIJUTSU-CHO KINZ (KAGG)

PRIORITY-DATA: 1985JP-0023979 (February 9, 1985)

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PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 62003041 A	January 9, 1987		004	
JP 90010777 B	March 9, 1990		000	

APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
JP 62003041A	February 9, 1985	1985JP-0023979	

INT-CL (IPC): C03C 3/09; C03C 4/08; C03C 6/00; C03C 13/00

ABSTRACTED-PUB-NO: JP 62003041A
BASIC-ABSTRACT:

Rare earth metal-contg. aluminosilicate is obtd. by heat-fusing a mixt. comprising 30-53wt.% of secondary Sirasu (volcanic ash), 9-30wt.% of Al_2O_3 and 23-54wt.% of Y_2O_3 concentrate so as as to vitrify. Pref. 13wt.% TiO_2 and/or 9wt.% ZrO_2 are added to improve chemical resistance, corrosion resistance, etc.

ADVANTAGE - The glass fusion time is shortened.

ABSTRACTED-PUB-NO: JP 62003041A
EQUIVALENT-ABSTRACTS:

CHOSEN-DRAWING: Dwg.0/0

DERWENT-CLASS: L01
CPI-CODES: L01-A;